

## **Bullitt County, Kentucky**

Bullitt County is part of the Louisville, KY-IN Metropolitan Statistical Area (MSA) and is on the I-65 South interstate corridor. It is located directly south of Jefferson County, southwest of Spencer County, northwest of Nelson County, and northeast of Hardin County.

EPA's June 29, 2004, proposal on appropriate designations for Kentucky included Bullitt County as nonattainment based on the following criteria:

- EPA indicates that Bullitt County has significant emissions and close proximity to the violating MSA monitors.
- EPA indicates that Bullitt County has monitoring data very close to the PM<sub>2.5</sub> standard, and that this indicates a potential to contribute to the PM<sub>2.5</sub> violations in the area;
- EPA states that Bullitt County has relatively high traffic and commuting patterns;
- EPA states that Bullitt County's population growth is significant enough to contribute to PM<sub>2.5</sub> violations in Jefferson County.

### **Emissions Data**

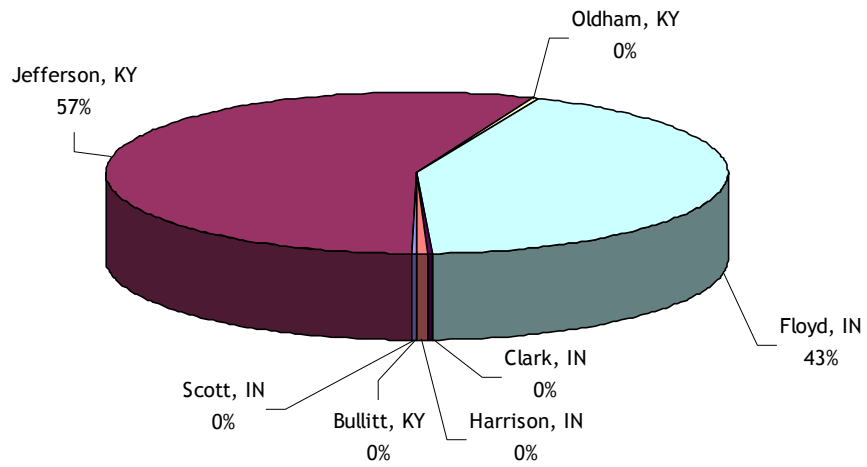
In Kentucky's original February recommendations, 1999 NEI data was used in the original analysis. That data documented that Bullitt County did not contribute a significant amount of suspect emissions in the seven county Metropolitan Statistical Area (MSA), mandated for review by U.S. EPA.

In EPA's June 29, 2004, letters to states, EPA looked outside the original MSA boundaries to determine if large emissions contributions from adjacent areas were having an impact on PM<sub>2.5</sub> levels in many of the areas. EPA also used the 2001 NEI which provided slightly newer data than had been recommended that states use.

Based on EPA's 2001 NEI data supplied to states, Bullitt County does not emit any pollutant over 10,000 TPY. In fact, Bullitt County emits less than 1% of SO<sub>x</sub> emissions from the counties recommended by EPA as having the potential to impact the violating monitors. A similar comparison can be made with both NO<sub>x</sub> and PM. Bullitt County's NO<sub>x</sub> emissions stand at 3% and PM at 5% of the total EPA recommended areas. In a detailed review of EPA's recommended nonattainment areas, Bullitt County ranks consistently low in potential emissions contributions within EPA's proposed nonattainment boundaries (See Figures 1-4 below). Based on this data, Kentucky strongly objects to EPA's characterization of emissions from Bullitt County as being significant.

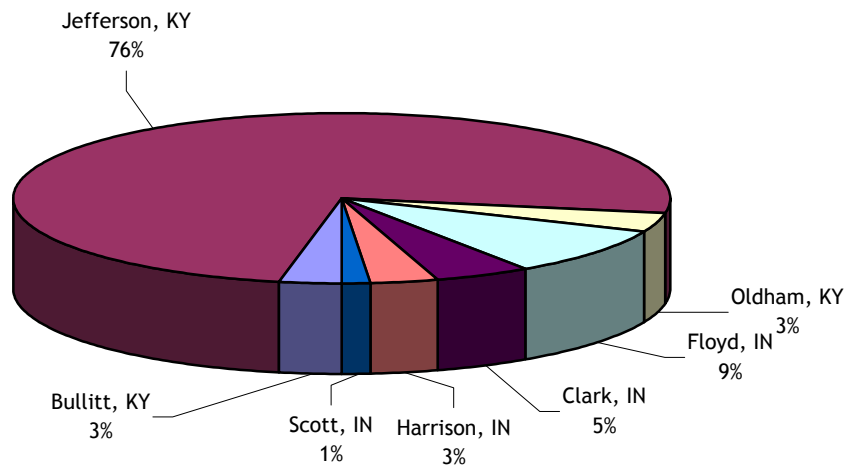
**Figure 1**

**Louisville Area 2001 SOx Emissions**



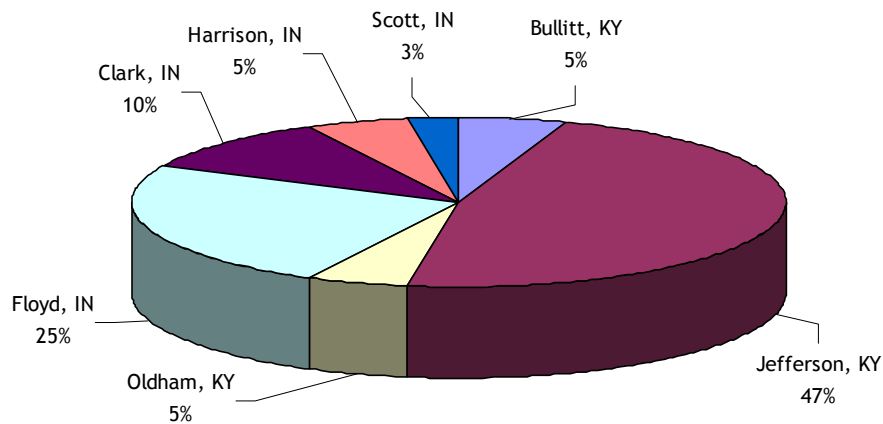
**Figure 2**

**Louisville Area 2001 NOx Emissions**



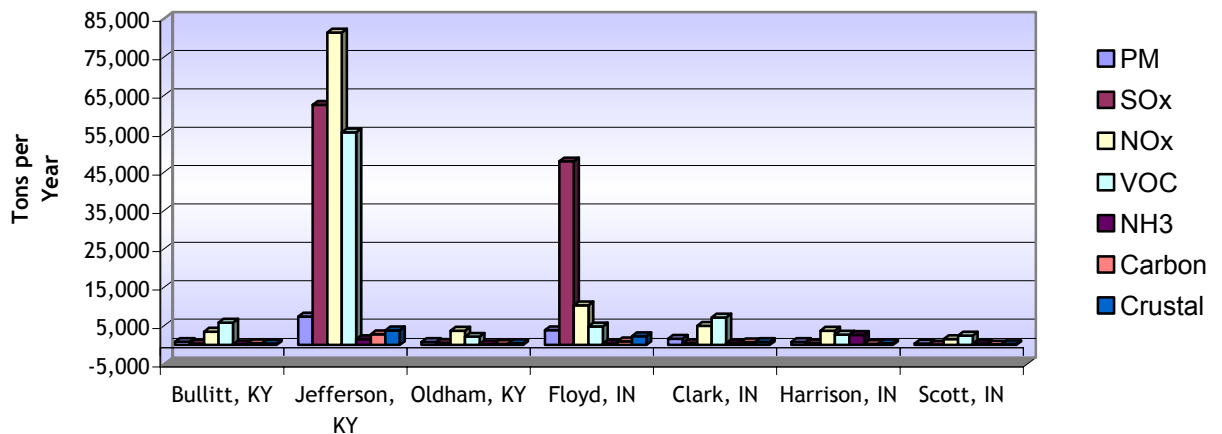
**Figure 3**

**Louisville Area 2001 PM Emissions**



**Figure 4**

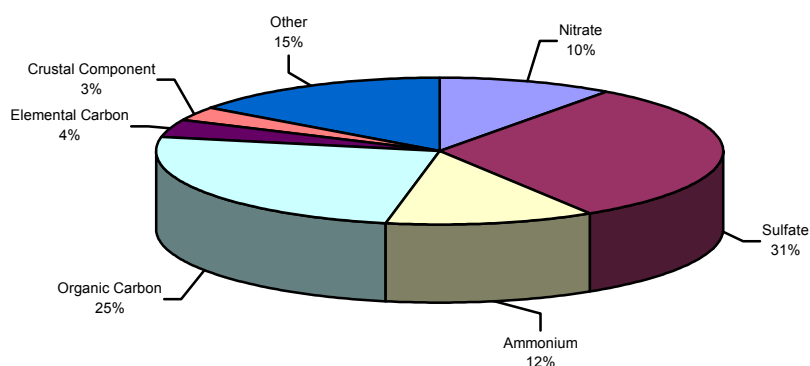
**Louisville Area 2001 Emissions**



In Figure 5 below, the data from Jefferson County's speciation monitor on Barret Avenue indicates that sulfates and organic carbon are the major components of the PM<sub>2.5</sub> values in the area. As can be seen in Figure 1 above, Bullitt County, Kentucky, contributes less than 1% of the SO<sub>2</sub> and approximately 8% of the total organic carbon emissions (Figure 6 below) in the counties recommended by EPA as having the potential to impact the violating monitor. In both instances, every other county with the exception of Oldham County, Kentucky and Harrison County, Indiana has a higher potential to contribute to the problem.

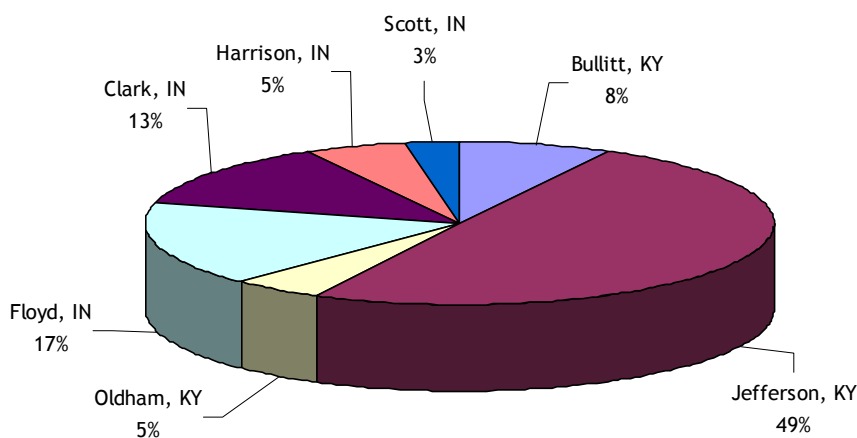
**Figure 5**

LMAPCD (Barret)  
AIRS Code 212270007 POC 5 (ROUTINE)  
Date(s): 1/3/03 - 12/29/03  
Average Concentration ( $\mu\text{g}/\text{m}^3$ )



**Figure 6**

**Louisville Area 2001 Carbon Emissions**



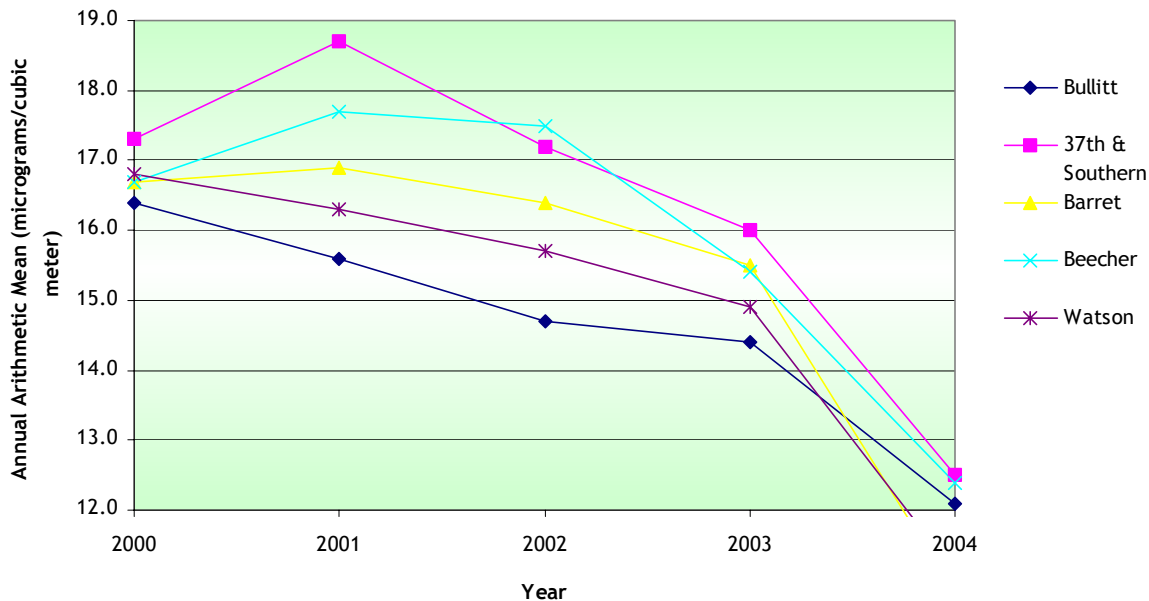
## Monitoring Data and Trends

The monitor located in Bullitt County shows attainment with the  $\text{PM}_{2.5}$  standard. For the 2001-2003 timeframe the design value ( $14.9 \mu\text{g}/\text{m}^3$ ) approaches the annual standard but continues to demonstrate attainment. The

annual concentrations, for both the Bullitt County monitor and for the entire area continue to show a downward trend as depicted in Figures 7 and 8, which utilized data from the year 2000 through April 2004.

**Figure 7**

**Louisville Area PM<sub>2.5</sub> Trend Utilizing Most Current Available Data**

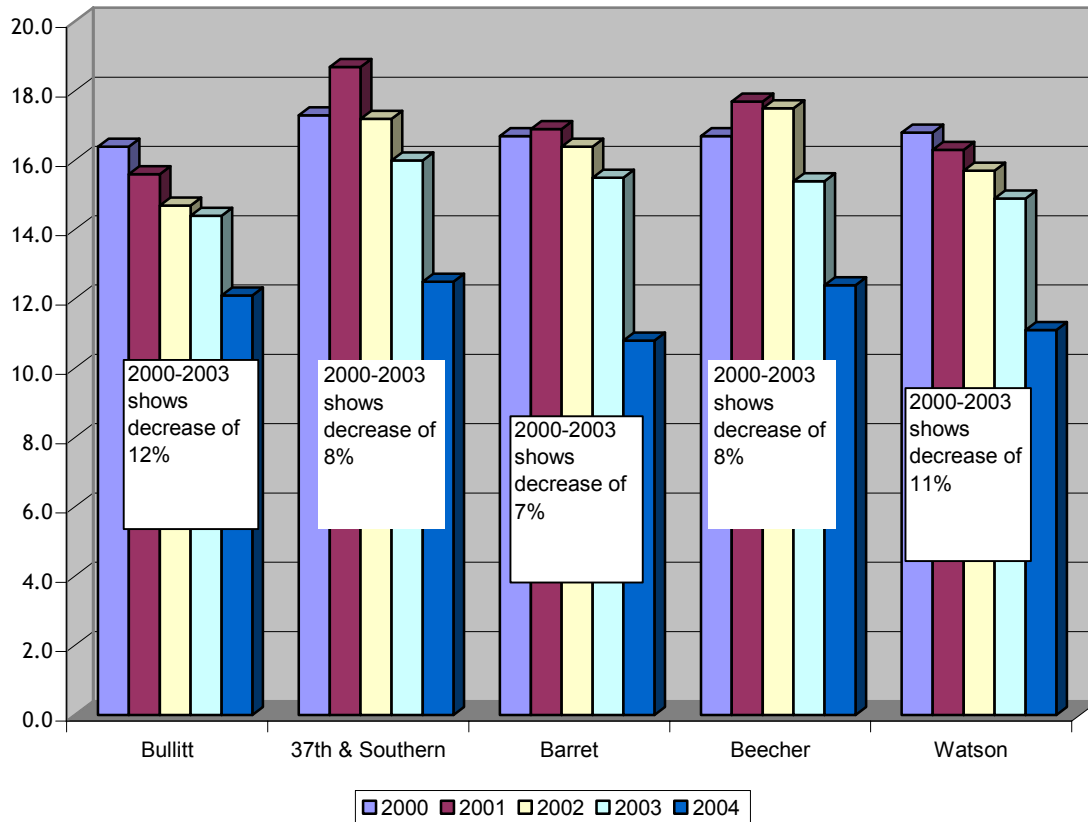


As depicted in Figure 8 below, monitoring data for the Louisville area shows a 7% - 12% decrease, depending on monitor location, from the year 2000 through 2003.

Monitoring data shows that Bullitt County is attaining the PM<sub>2.5</sub> standard. Based on the continuing decline in PM<sub>2.5</sub> levels throughout the region, all monitors within this region are anticipated to attain the PM<sub>2.5</sub> standard without any additional controls being imposed on the area. The monitor with the highest design value in the entire region, located on 37<sup>th</sup> and Southern in Jefferson County is anticipated to be in compliance with the standard by the end of 2005, if levels continue to decline as they have in the past. Based on air monitoring data so far in 2004, levels may decline more rapidly than in the past few years.

**Figure 8**

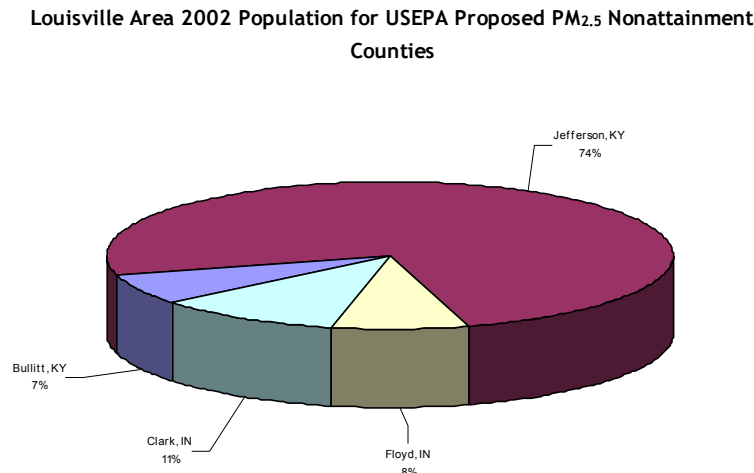
**PM Decreases in the Louisville Area**



## Population Density and Growth

EPA stated that 2002 population levels indicated Bullitt County had the potential to impact  $PM_{2.5}$  violations in the area. However, while Bullitt County has the fourth highest population in the MSA, the county itself comprises approximately only 6% of the entire MSA, and only 7% of the counties recommended by EPA as having the potential to impact the violating monitors. See Figure 9 below.

**Figure 9**



## **Traffic and Commuting Patterns**

EPA's position on traffic and commuting patterns in the June 29<sup>th</sup> letter noted that Bullitt County has potentially significant numbers of commuters impacting the area. However, further in the document under a specific discussion of population levels, EPA states that population is not a factor in any county except Jefferson. In 2002 Bullitt County contributed only 7% of the VMT's in the area recommended by EPA as having the potential to impact the violating monitors. Based on data used by EPA in their analysis, Bullitt County had 19,730 commuters traveling into Jefferson County. This number is insignificant (6.5%) when compared to 303,624 Jefferson County commuters in 2002.

It is important to note that any possible impacts from population or commuter contributions from Bullitt County would be mitigated in the near future by national fuel programs referenced later in this document.

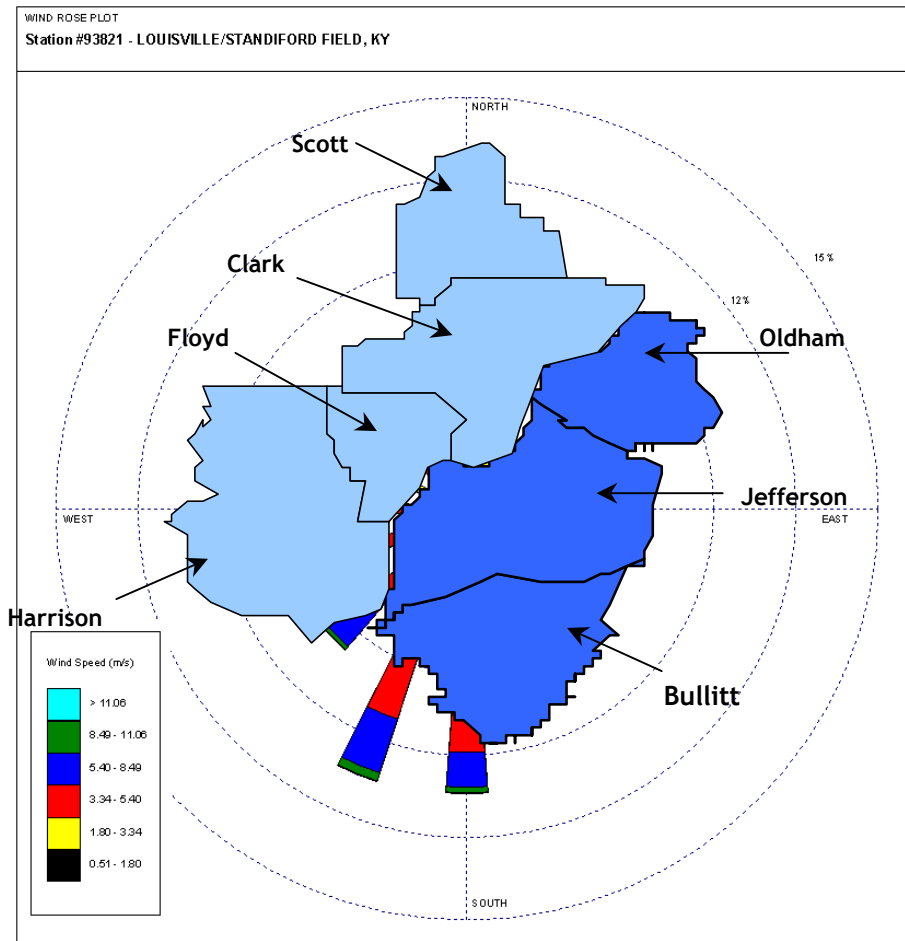
Therefore, Kentucky believes that Bullitt County does not have the population, commuter, or VMT potential to contribute to PM<sub>2.5</sub> violations in the area.

## **Additional Information**

A further review of wind rose data shows that predominant winds generally come from the south-southwest, which would typically show a contribution coming from Bullitt County (See Figure 10). However, previous documented

data outlining emissions contribution percentages in the area, population and commuter data show that activities actually occurring in Bullitt County would have little impact on  $PM_{2.5}$  levels within that county or on other counties within the MSA. Rather, it appears that the monitor located in Bullitt County is being impacted by emissions from other areas.

**Figure 10**



Using the NOAA HYSPLIT Model, a review of some of the highest PM<sub>2.5</sub> level 24-hour periods was performed to attempt to determine possible contributions from Bullitt County. A separate analysis was performed on days when monitoring levels were high in Bullitt County and days when monitoring levels were high in other monitors within the region.

As can be seen in Attachments A through C on days when monitored values were highest in Bullitt County, wind patterns indicate a potential impact from both Jefferson County and Southern Indiana.

A separate review of days when monitored values were highest in Jefferson County and Southern Indiana, again show no impact coming from Bullitt County. See attachments D through L.

### **Additional Regional/National Controls**

The implementation of new federal rules to decrease the amount of sulfur in both gasoline and diesel fuel will significantly decrease the amount of SO<sub>2</sub> in the entire area. Because of the Low Sulfur Diesel Rule, in 2007, new clean engines operating on 15-ppm sulfur diesel fuel will reduce NO<sub>x</sub> emissions by 50%, and reduce PM emissions by more than 90%. Due to the Tier 2 Vehicle and Gasoline Sulfur program, by 2006 average national gasoline sulfur levels will be 90% lower.

Upon implementation of the Clean Air Interstate Rule (CAIR) SO<sub>2</sub> emissions from power plants will be reduced nationwide by 3.6 million tons in 2010 (approximately 40 percent below current levels) and by another 2 million tons per year when the rules are fully implemented (approximately 70 percent below current levels). NO<sub>x</sub> emissions would be cut by 1.5 million tons nationwide in 2010 and 1.8 million tons annually in 2015 (about 65 percent below today's levels).

The first phase of compliance under the CAIR rule to reduce both SO<sub>2</sub> and NO<sub>x</sub> emissions would be required by 2010, allowing substantial emission reductions in the area, by the proposed attainment date for PM<sub>2.5</sub> nonattainment areas.

### **Conclusions**

Based on the factors discussed above, Kentucky believes that Bullitt County should be designated attainment for the PM<sub>2.5</sub> standard.

- Kentucky believes that EPA's use of the weighted emissions scoring approach was skewed. Although attempting to have a standardized process to review violations of the PM<sub>2.5</sub> standard throughout the nation

on the surface appears to make sense, each area is actually very different and emission contribution ratios are just one factor and should not alone be used to determine impacts.

- Emissions data, population, and commuter data show that the actual percentage of contribution from Bullitt County itself is exceptionally low compared to other counties within the region. This analysis actually points to the Bullitt County monitor being impacted by emissions from other counties within the region.
- PM<sub>2.5</sub> levels continue to decline throughout the entire region. From a review of all monitors in the region, an average 9% decline in PM<sub>2.5</sub> levels has occurred from 2000 through 2003. The Bullitt County monitor in the region is currently showing attainment of the annual PM<sub>2.5</sub> standard using 2002 through 2004 data and other monitors are projected to come into compliance within a short period of time.
- A review of trajectory analysis on both days when the Bullitt County monitor is showing high PM<sub>2.5</sub> values, as well as a separate review of a sampling of days when PM<sub>2.5</sub> values are highest at other monitors within the region, show that Bullitt County is not impacting violating monitors on days when the levels are highest.
- Additional emission reductions on a national and regional level will provide substantial benefits in the region. The anticipated sulfur reductions due to the Low Sulfur Diesel Rule and the Tier 2 Vehicle and Gasoline Sulfur programs, and the Clean Air Interstate Rule (CAIR) will further lower pollutant levels within this region.

Based on the above conclusions, Bullitt County, Kentucky should be designated attainment for the PM<sub>2.5</sub> standard. To have this county designated nonattainment would invoke additional, substantial, unnecessary requirements on local government planning agencies. Especially since a thorough review of information shows that Bullitt County is being impacted by emissions coming from outside the county. Drastic emission reductions are scheduled to occur in the mobile sector throughout the next several years that will greatly impact pollutant levels in the area. Couple these changes with those anticipated by the CAIR provisions which will further reduce SO<sub>x</sub> and NO<sub>x</sub> emissions within the region, the air monitoring data demonstrating attainment of the PM<sub>2.5</sub> Standard, and the downward trend in monitored values, and the conclusion must be that Bullitt County, Kentucky, should be designated attainment for the PM<sub>2.5</sub> Standard.